

PARASITIC INFECTIONS STATUS OF THE URBAN POOR COMMUNITIES IN PENINSULAR MALAYSIA

ASSOC. PROF. DR. SITI NURSHEENA MOHD. ZAIN

nsheena@um.edu.my

INTRODUCTION

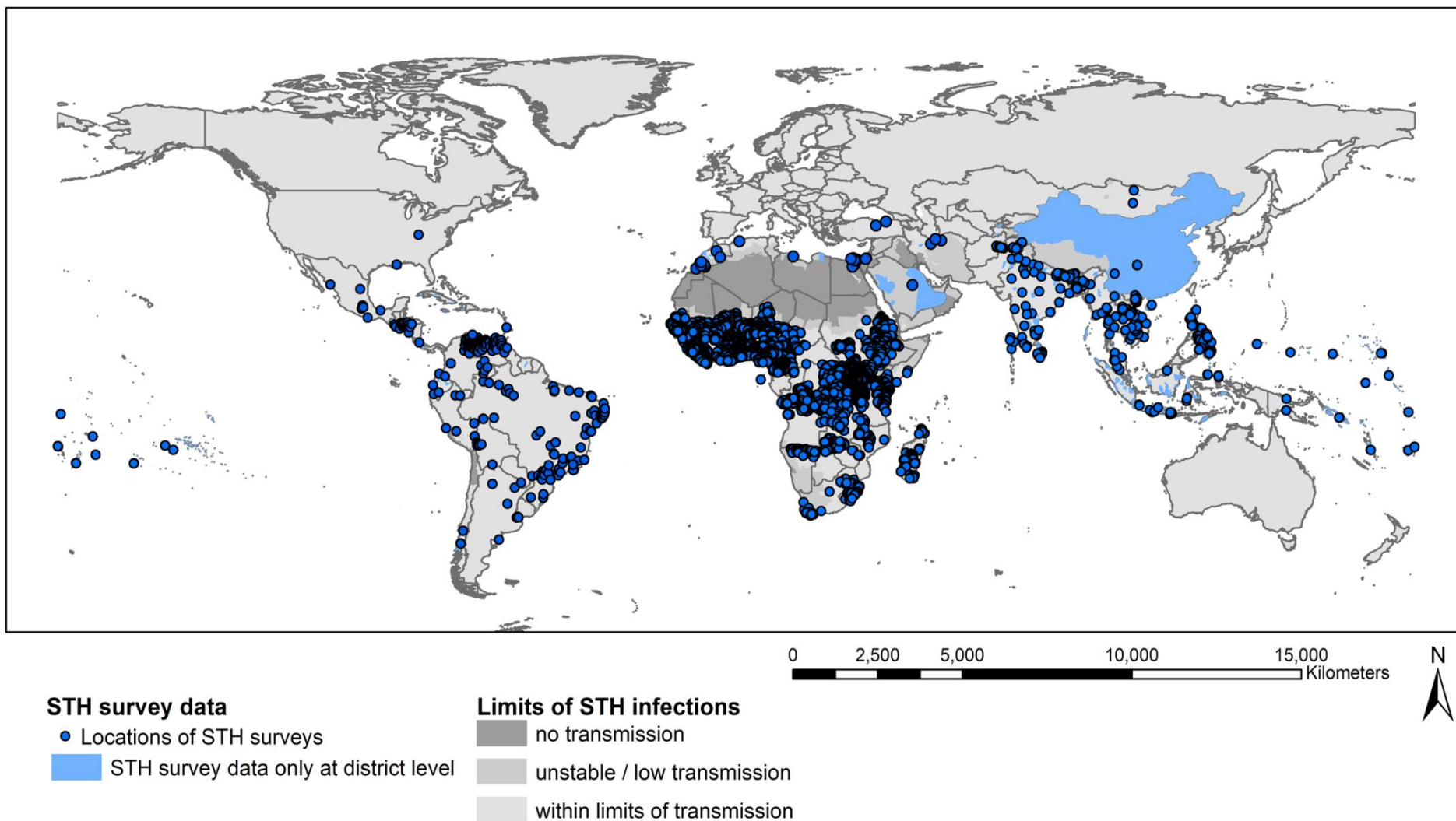
Urban poor can be defined as a **population in cities with household less than RM940 per month** (Economical Planning Unit, Department of Statistics Malaysia, 2018), measured quantitatively by Poverty Line Index (PLI).

More accurately, it is the inability of the individuals in the urban areas to fulfill the requirement on achieving the minimum basic necessities of life including non-monetary indicators such as **food, education, health, housing condition, household appliances and amenities** (World Bank, 1990; Siwar et al. 1997; Sen, 1999; Rashidah et al, 2012; Samad et al, 2012; Chamcuri, 2016).



- ❖ A total of **76.0%** of the population in Malaysia has undergone **urbanization**.
- ❖ **Access to sanitation facilities** in Malaysia has improved also both in urban and rural areas available up to **96.0%** of the population.
- ❖ Meanwhile access to clean **drinking water sources** have improved for up to **98.2%** of the population (CIA, 2017).

Availability of soil-transmitted helminth survey data: Global



According to World Health Organization (WHO), soil-transmitted helminth (STH) is one of the **17 Neglected tropical diseases**. More than 1.5 billion people, or 24% of the world's population especially among the disadvantaged, are infected with soil-transmitted helminth infections worldwide.

Nematode infections transmitted through soil contaminated by human faeces causing anaemia, vitamin A deficiency, stunted growth, malnutrition, intestinal obstruction and impaired development.

Four common species infecting human are the roundworm (***Ascaris lumbricoides***), the whipworm (***Trichuris trichiura***) and hookworms (***Necator americanus*** and ***Ancylostoma duodenale***)

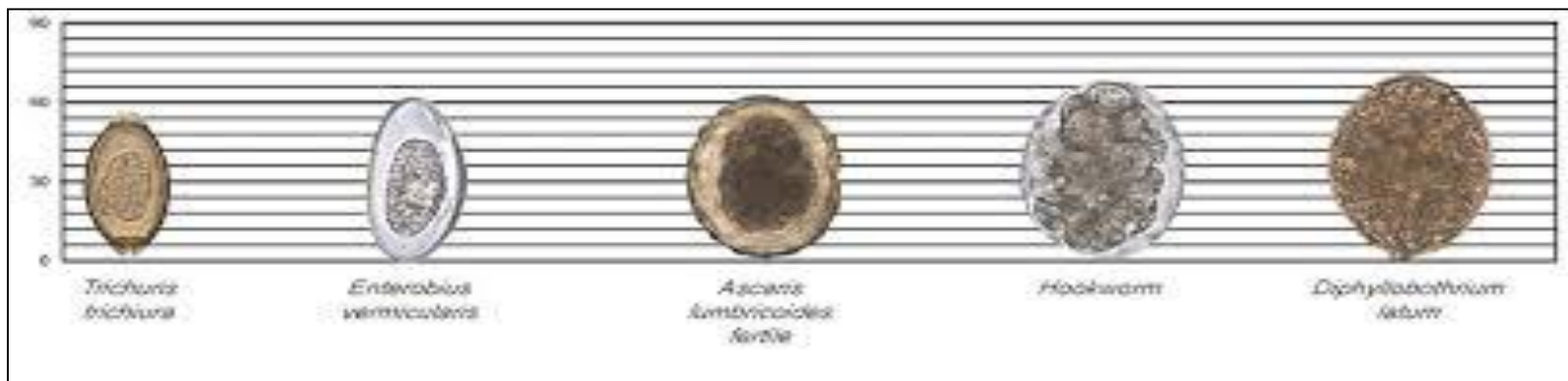


Figure 1. Source: DPDx, Centers for Disease Control and Prevention

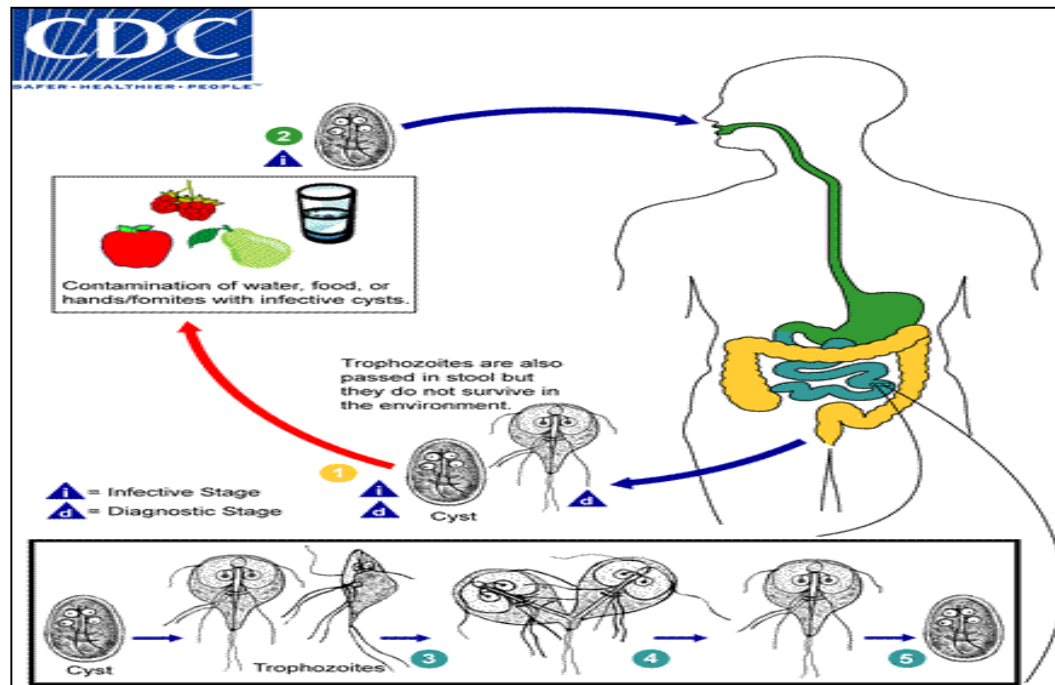


Figure 2: Life cycle of *Giardia* spp. Source: CDC, 2016

- The infection is spread from person to person by **food contaminated with feces**, or by **direct fecal-oral contamination**.
- Symptoms vary greatly from asymptomatic to **diarrhea, gas or flatulence, greasy stool that float, stomach or abdominal cramps, upset stomach or nausea, dehydration and weight loss**.

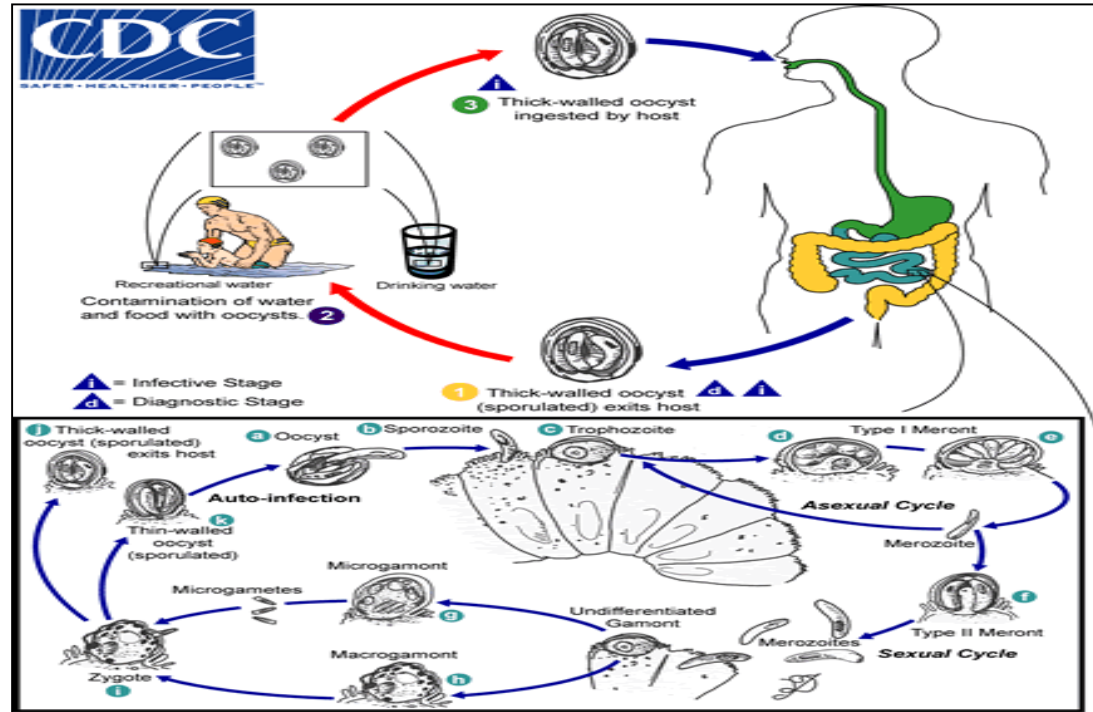


Figure 3: Life cycle of *Cryptosporidium* spp. Source: CDC, 2016

- Transmission of *Cryptosporidium parvum* and *C. hominis* occur mainly through **contact with contaminated water (e.g., drinking or recreational water)**.
- Symptoms generally appear 2 to 10 days (average 7 days) after infection with **watery diarrhea, stomach cramps or pain, dehydration, nausea, vomiting, fever and weight loss**.

Poverty rate in Malaysia has decline dramatically over the past three decades from **16.5% to 3.8%** from 1970 to 2009 (CIA, 2018; Sherina et al, 2011, Agarwal et al, 2007).

However, **overpopulation in the urban cities is still a concern** despite the low poverty rate (Economical Planning Unit, 2003) and may have an impact to the quality of life as they are **exposed to variety of diseases** (Stewart et al., 2005; Montgomery 2009, Mohd Sidek et al., 2011).

The goal of our study was **to determine the parasitic infection status among the urban poor communities** and its relationship with intrinsic factors (age and gender) and social demography and lifestyle factors.

METHODOLOGY

Individuals from the urban poor communities were recruited among the residents inhabiting low-cost flats and squatter settlements in the vicinity of Kuala Lumpur and Selangor.



A total of 172 volunteers were successfully recruited and faecal samples were collected.

Research Ethics Reference number: MECID NO: 20143-40



Collected faecal samples were examined via microscopy for the presence of helminths (10x magnification) using formalin ethyl acetate concentration technique and protozoan infection.

RESULTS AND DISCUSSION

The prevalence rate of **helminth** infection was **20.3 %** with 35 participants were infected.

- *Ascaris lumbricoides*
(31/172; **18.0%**) eggs
- *Hymenolepis nana*
(6/172; **3.5%**) ova.



Ascaris lumbricoides
N=31, 18.0%



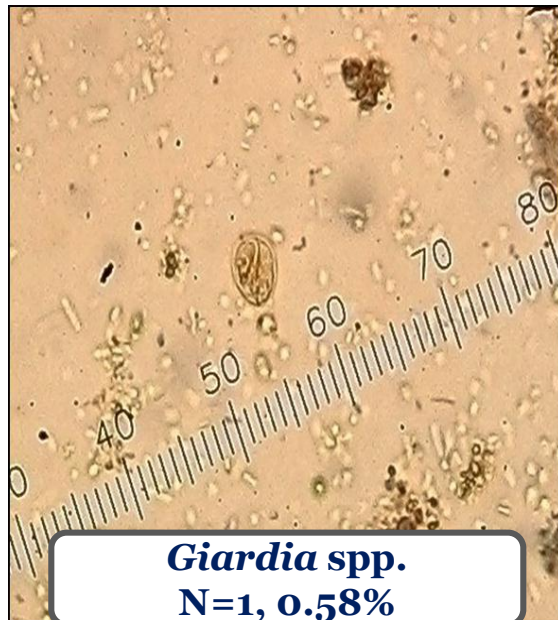
Hymenolepis nana
N= 1, 3.5%

Summary of association between risk factors and parasitic infection.

Risk factors	<i>p</i>-value
Age	0.926
Sex	0.688
Education level	0.203
Drinking water sources	0.477
Solid waste disposal method	0.276
Employment sector	0.367
Pet ownership	0.798
Preferred eating method	0.558
Frequency of hand washing	0.224

The overall prevalence of protozoan infections was **8.14%** (n=14) with:

- ***Giardia sp.*** (n=1, 0.58%)
- ***Cryptosporidium spp.*** (n=13, 7.56%).



- These protozoa are commonly transmitted **via food and water** although foodborne and waterborne outbreaks of infections are uncommon in Malaysia.
- The potential of food and water contamination with protozoa from **unwashed hands after defecation** is of great concern.
- The infections in the study population must be considered as **public health concerns**.
- Parasite control strategies especially **treatment** and **health education** of foodborne and waterborne diseases are recommended for all communities in Malaysia.

Recommendations

Low infection was recorded in the population, and highlights the importance of;

- ✓ Increase knowledge of transmission of helminth and protozoan infection**
- ✓ Call for public health engagement programs in these communities for improvements in hygiene and sanitation.**

Acknowledgements

□Ministry of Health, Malaysia

□Medical staff and nurses from UMMC and HUKM

□All the volunteers

□Financial support : Ministry of Higher Education (Fundamental Research Grant Scheme FP015-2014B) and University of Malaya (PPP grant PGo40-2014A).

THANK YOU



Joint meeting MSPTM-MSMBB 2019
International conference of the Malaysian Society of
Parasitology and The Malaysian Society of Molecular
Biology and Biotechnology

20 – 21 MARCH 2019
KUALA LUMPUR

Let's meet up with our experts...



www.msptm.org